

Rajinder Kaur (Barot)*

*Associate Professor, Department of Economics, PILA - Parul University
rajinderbarot@gmail.com*

Abstract

Amidst political and economic rift, environmental concerns have been able to create its ground in India so far. Besides India's capital-intensive growth it has its Sustainable Development Goals (SDG's) in place. Also the GEF (Global Environment Facility) project – under which government has identified few critical areas and cities to initiate the funding facility, is working well. The amount for achieving India's Sustainable Development Goals (SDG's) is humungous. So it becomes important not only to mobilize finances but also to come up new and innovative fund raising channels to achieve SDG's. This paper attempts to show the growth of green funds so far and future opportunities for such funds in India.

Keywords: Environmental finances, Global environmental facility, Sustainable development goals, green finance ecosystem

1. Introduction

The world is grappling with a dual challenge: the urgent need for infrastructure development to stimulate economic growth and the imperative to mitigate the environmental impacts of such growth. Power plants, transportation systems, and infrastructure construction collectively account for 70% of global greenhouse gas emissions, and the World Health Organization predicts a rising death toll linked to these emissions. The concept of green funds has gained momentum globally as investors increasingly prioritize environmentally responsible investments. In India, a country grappling with environmental challenges and ambitious sustainability goals, green funds have shown substantial growth. Amidst rapid economic expansion, India recognizes this challenge and the need for innovative financing mechanisms to support sustainable infrastructure development.

The Need for Sustainable Infrastructure: India's infrastructure ambitions are massive, requiring approximately \$4.5 trillion by 2040. This funding is essential for various initiatives, including generating 175GW of renewable energy by 2022, expanding intra-city metro rail networks, promoting electric vehicles, and building affordable green housing. Traditional financing methods alone fall short of meeting these requirements, necessitating the exploration of innovative climate financing approaches.

Green financing, encompassing instruments and strategies aimed at safeguarding the environment, has gained traction globally. It encompasses initiatives to fund conservation projects, enhance corporate environmental responsibility, and improve community well-being without compromising profitability. Key components include carbon trading and conservation land trusts.

One of the most prominent mechanisms in green financing is the issuance of "green bonds." These bonds channel investments into projects and initiatives supporting sustainable development and environmental regulations conducive to a greener economy. They have gained momentum worldwide, and India has

*Corresponding author

embraced this financial innovation.

2. India's Pioneering Green Bonds

Green bonds are debt securities specifically earmarked to fund environmentally friendly projects. They are characterized by their use of proceeds for projects related to renewable energy, energy efficiency, sustainable transportation, and more (Climate Bonds Initiative, 2019).

In 2015, YES BANK issued India's first-ever green bond, signaling the country's commitment to green financing. The bond raised \$160 million (INR 1,000 crore) and was rated AA+ by CARE. Initially intended to be an \$80 million offering, it was doubled due to high investor interest.

YES BANK's strategy aligned with India's ambitious renewable energy goals, committing to invest in 500MW annually, which later grew to a 5000MW commitment over five years. This aligns with the government's pursuit of domestic and global capital to support renewable energy targets and provide favorable financing terms.

The bank, in a pioneering move, underwrote partially-guaranteed bonds worth \$56 million (INR 380 crore) to assist power companies in raising capital. The first-loss coverage was borne by India Infrastructure Finance Company Ltd. (IIFCL), with the Asian Development Bank providing an irrevocable back-stop guarantee.

The Indian government has recognized the importance of environmental financing and has taken several steps to mobilize resources and promote green investments. The Global Environment Facility project, which has identified critical areas and cities for funding, has been a crucial driver of green finance in India (Zhang, 2023). Furthermore, the government's push for climate action and renewable energy has attracted significant private investment in the country's green finance market, as evidenced by the boom in ESG mutual funds. (Azad et al., 2022) (Pasupuleti & Rao, 2023)

However, the financial requirements for achieving India's Sustainable Development Goals are substantial, and a multifaceted approach is necessary to meet these needs.

3. Impact and Environmental Benefits

The funds from these green bonds have been directed toward 23 solar and wind energy projects across India. These projects have the potential to prevent annual CO₂ emissions of 23 megatons and a lifetime reduction of 55 megatons. They also contribute to reducing SO₂ and NO_x emissions, preventing thousands of kilotons of pollutants.

India has witnessed a surge in green bond issuances. In 2017, India's total green bond issuance crossed the \$10 billion mark, showcasing investor interest in environmentally sustainable projects.

India's focus on renewable energy has attracted substantial green investments. The country became one of the world's largest solar energy markets, with investments pouring into solar projects, wind energy, and hydropower.

The Indian government introduced policies and incentives to promote green investments. The launch of the National Action Plan on Climate Change (NAPCC) and initiatives like the Green Energy Corridor Project bolstered the green investment ecosystem.

Asset management companies in India started launching green and sustainable mutual funds. Many investors began incorporating Environmental, Social, and Governance (ESG) criteria into their investment decisions, fostering responsible investing.

4. Global Environment Facility (GEF) and India's Green Initiatives

Apart from green financing, international mechanisms like the Global Environment Facility (GEF) play a crucial role in supporting environmental projects in India. GEF focuses on biodiversity conservation, climate change mitigation, land degradation control, chemicals and waste management, and international waters.

GEF projects address the root causes of environmental issues, helping nations innovate, pilot technologies, and build an enabling environment for sustainable development. India has been allocated \$130.58 million in GEF-6 funding, prioritizing climate change, biodiversity, and land degradation.

5. GEF's Impact on India's Environment:

Biodiversity Conservation: GEF has played a pivotal role in preserving India's rich biodiversity. Projects funded by GEF have supported the protection of key ecosystems, such as the Western Ghats and the Eastern Himalayas. The GEF-financed Protected Area Network and the Biodiversity Conservation Corridors projects have helped expand and safeguard these critical habitats. "Conservation of Biodiversity in the Western Ghats and Sri Lanka Biodiversity Hotspots." (2018).

Climate Change Mitigation: GEF has been instrumental in promoting climate resilience and reducing greenhouse gas emissions in India. Projects focusing on renewable energy, energy efficiency, and sustainable transport have accelerated the adoption of clean technologies. "Promoting Energy Efficiency in Small and Medium Enterprises." (2017).

Land Degradation and Sustainable Land Management: Through GEF-supported initiatives, India has made strides in combatting land degradation and promoting sustainable land management practices. Projects have aimed at reversing land degradation in areas like the Bundelkhand region. "Combating Land Degradation and Enhancing Agricultural Sustainability in the Bundelkhand Region." (2019).

While GEF has made significant contributions to India's environmental goals, challenges remain. Delays in project implementation, coordination issues, and the need for greater private sector involvement have posed challenges to achieving full effectiveness. To address these, GEF has worked closely with Indian institutions to enhance project execution and engage stakeholders more effectively.

6. Future Prospects

Circular Economy and Waste Management: As India grapples with mounting waste and pollution challenges, GEF can extend its support to foster a circular economy. This approach emphasizes reducing, reusing, and recycling materials, thereby minimizing environmental impacts. GEF could fund pilot projects for innovative waste management practices, including waste-to-energy solutions and plastic waste reduction.

India's agricultural sector faces sustainability challenges due to soil degradation and water scarcity. GEF can partner with India to promote sustainable agricultural practices, such as precision farming and soil health improvement. GEF could support projects aimed at enhancing soil fertility, conserving water resources, and promoting climate-resilient agricultural practices.

With rapid urbanization, India's cities are under tremendous environmental stress. GEF can collaborate on urban sustainability projects that focus on reducing air and water pollution, improving public transportation, and enhancing green spaces. GEF could fund urban rejuvenation initiatives, including the development of green infrastructure and sustainable urban mobility solutions.

India is vulnerable to climate change impacts. GEF can continue its support by investing in ecosystem-based adaptation projects, which protect vulnerable communities by conserving and restoring ecosystems.

GEF could fund projects to restore mangrove ecosystems for coastal protection or afforestation efforts to combat desertification.

India aimed to achieve 175 GW of renewable energy capacity by 2022, providing a vast investment opportunity. Green funds could continue to support solar and wind energy projects.

7. Conclusion

GEF has been a valuable partner in India's environmental journey, contributing significantly to biodiversity conservation, climate change mitigation, and sustainable land management. As we look to the future, there are promising opportunities for GEF to deepen its engagement in India, addressing emerging challenges in waste management, agriculture, urban sustainability, and ecosystem-based adaptation. Through continued collaboration and innovative projects, GEF and India can work together to build a more sustainable and resilient future. The country's ambitious Sustainable Development Goals have necessitated the mobilization of substantial financial resources, and the development of innovative financing channels. As India continues to prioritize environmental concerns amidst its capital-intensive growth, the future prospects for green finance in the country remain promising.

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